



07-26-04

2815  
JW

Practitioner's Docket No. 56370 (71987)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: C. Liao

U.S. SERIAL NO.: 09/929,765

EXAMINER: M. Warren

FILED: August 14, 2001

GROUP: 2815

FOR: BALL GRID ARRAY PACKAGE WITH ELECTRICALLY-  
CONDUCTIVE BRIDGE

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

AMENDMENT TRANSMITTAL

1. Transmitted herewith is a Response to Office Action for this application.

STATUS

2. Applicant is  
☐ a small entity. A statement:  
☐ is attached.  
☐ was already filed.  
☒ other than a small entity.

CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. SECTION 1.8(a))

I hereby certify that, on the date shown below, this correspondence is being:

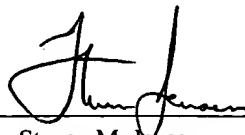
EXPRESS MAILING

☒ I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EV4389700451US addressed to the: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: July 23, 2004

FACSIMILE

- ☐ transmitted by facsimile to Group 2800 of the Patent and Trademark Office (703) 872-9318.

Signature   
Steven M. Jensen

(type or print name of person certifying)

## EXTENSION OF TERM

*NOTE: "Extension of Time in Patent Cases (Supplement Amendments) -- If a timely and complete response has been filed after a Non-Final Office Action, an extension of time is not required to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.*

*If a timely response has been filed after a Final Office Action, an extension of time is required to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run." Notice of December 10, 1985 (1061 O.G. 34-35).*

*NOTE: See 37 C.F.R. Section 1.645 for extensions of time in interference proceedings, and 37 C.F.R. Section 1.550(c) for extensions of time in reexamination proceedings.*

3. The proceedings herein are for a patent application and the provisions of 37 C.F.R. Section 1.136 apply.

*(complete (a) or (b), as applicable)*

- (a) ☒ Applicant petitions for an extension of time under 37 C.F.R. Section 1.136 (fees: 37 C.F.R. Section 1.17(a)(1)-(4)) for the total number of months checked below:

|                                     | Extension<br>(months) | Fee for other than<br>small entity | Fee for<br>small entity |
|-------------------------------------|-----------------------|------------------------------------|-------------------------|
| <input checked="" type="checkbox"/> | one month             | \$ 110.00                          | \$ 55.00                |
| <input type="checkbox"/>            | two months            | \$ 420.00                          | \$ 210.00               |
| <input type="checkbox"/>            | three months          | \$ 950.00                          | \$ 475.00               |
| <input type="checkbox"/>            | four months           | \$ 1,480.00                        | \$ 74000                |

Fee: \$ 110.00

If an additional extension of time is required, please consider this a petition therefor.

*(check and complete the next item, if applicable)*

- ☐ An extension for \_\_\_\_\_ months has already been secured. The fee paid therefor of \$ \_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ 110.00

**OR**

- (b) ☐ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

### FEE FOR CLAIMS

4. The fee for claims (37 C.F.R. Section 1.16(b)-(d)) has been calculated as shown below:

| (Col.1)  |       | (Col. 2)                        | (Col. 3) SMALL ENTITY |           |                     | OTHER THAN A SMALL ENTITY |                  |            |
|--|-------|---------------------------------|-----------------------|-----------|---------------------|---------------------------|------------------|------------|
| Claims Remaining After Amendment                   |       | Highest No. Previously Paid For | Present Extra         | Rate      | Addit. Fee          | OR                        | Rate             | Addit. Fee |
| Total  | Minus | 20                              | =                     | x \$9 =   | \$                  |                           | x \$18 =         | \$ 0.00    |
| Indep.   | Minus | 3                               | =                     | x \$42 =  | \$                  |                           | x \$84 =         | \$ 0.00    |
| [ ] First Presentation of Multiple Dependent Claim |       |                                 |                       | + \$140 = | \$                  |                           | + \$280 =        | \$ 0.00    |
|  |       |                                 |                       |           | Total Addit. Fee \$ | OR                        | Total Addit. Fee | \$ 0.00    |

\* If the entry in Col. 1 is less than the entry in Col. 2, write "O" in Col. 3,

\*\* If the "Highest No. Previously Paid For" IN THIS SPACE is less than 20, enter "20".

\*\*\* If the "Highest No. Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest No. Previously Paid For" (Total or Indep.) is the highest number found in the appropriate box in Col. 1 of a prior amendment or the number of claims originally filed.

**WARNING:** "After final rejection or action (Section 1.113) amendments may be made canceling claims or complying with any requirement of form which has been made." 37 C.F.R. Section 1.116(a) (emphasis added).

(complete (c) or (d), as applicable)

(c) [X] No additional fee for claims is required.

**OR**

(d) [ ] Total additional fee for claims required \$

### FEE PAYMENT

5. [X] Attached is a check in the sum of \$ 110.00.  
 [ ] Charge Account No. 04-1105 the sum of \$\_\_\_\_\_.

## FEE DEFICIENCY

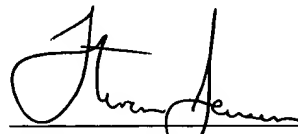
*NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, (1065 O.G. 31-33).*

6. ☒ If any additional extension and/or fee is required, charge Account No. 04-1105.

### AND/OR

- ☒ If any additional fee for claims is required, charge Account No. 04-1105.

Date: July 23, 2004



SIGNATURE OF PRACTITIONER

Reg. No. 42,693

Steven M. Jensen

(type or print name of practitioner)

EDWARDS & ANGELL, LLP

Tel. No. 617-439-4444

P.O. Box 55874

P.O. Address

Customer No. 21874

Boston, MA 02205

BOS2\_452631.1



Docket No. 56370 (71987)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: C. Liao

U.S. SERIAL NO.: 09/929,765

EXAMINER: M. Warren

FILED: August 14, 2001

GROUP: 2815

FOR: BALL GRID ARRAY PACKAGE WITH ELECTRICALLY-  
CONDUCTIVE BRIDGE

**CERTIFICATE OF EXPRESS MAILING**

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on this date July 23, 2004 in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EV438970045US addressed to the: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: \_\_\_\_\_

Steven M. Jensen

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**RESPONSE TO OFFICE ACTION**

Applicant is in receipt of the Office Action dated March 26, 2004 of the above-identified application. A request for a one-month extension of time is submitted herewith. Applicant responds to the Office Action as follows.

Applicant's claimed invention is directed to a ball grid array (BGA) package including an electrically-conductive bridge that spans in an overhead manner across a continuous electrically conductive trace, the trace connecting a corresponding bond finger and via. The electrically-conductive bridge can be either a gold wire bonded through existing wire-bonding technology, or a zero-resistance chip resistor bonded through existing surface-mount (SMT) technology.

For example, as recited in claim 6, the Applicant's invention includes a plurality of continuous electrically-conductive traces (70A, 70C, 70D) for electrically connecting a first subgroup of bond fingers (60A, 60C, 60D) to corresponding vias (80B, 80C, 80D), at least one of the traces (70A, as shown in FIG. 5) being interposed between a second subgroup of bond fingers (60B) and corresponding vias (80A). An electrically-conductive bridge (90) can be provided as a bonding wire that is mounted by wire-bonding technology and spans in an overhead manner across the interposing electrically-conductive trace (70A) (see FIG. 5).

Claim 6 was rejected under 35 USC 103(a) as being unpatentable over "Applicant's Prior Art Figures 3 and 4 (APAF)" in view of Japanese Publication 60-157238 to "Takahama". Claim 8 was rejected under 35 USC 103(a) as being unpatentable over APAF in view of Takahama, and further in view of U.S. Patent 3,560,256 to Abrams. Claims 11 and 13 were rejected under 35 USC 103(a) as being unpatentable over APAF in view of Takahama and Abrams. These rejections are respectfully traversed.

As indicated in the Office Action, prior art FIGS. 3 and 4 do not teach or suggest the electrically-conductive bridge recited in claims 6 and 11.

The Takahama reference fails to remedy the deficiencies of APAF. Because of structural differences between APAF and Takahama, one of ordinary skill in the art would not have any reasonable motivation to combine the references.

With reference to FIG. 3 of Takahama, a semiconductor device is disclosed which utilizes Al wire for connecting semiconductor elements. In the Office Action, it was alleged that FIG. 3 discloses "a semiconductor device having traces (3, 4, and 5)" (Office Action, page 3, first line). However, elements 4 and 5 in Takahama are semiconductor elements (see Abstract), **not** traces for connecting bond fingers to corresponding vias, as required in claims 6 and 11.

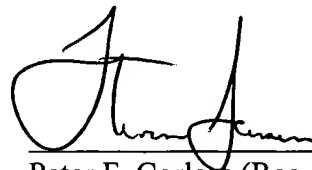
In other words, the semiconductor elements 4 and 5 in Takahama do not connect bond fingers and vias, as recited in claim 6 of the Applicant's claimed invention. Instead, Takahama provides the Al wire for connecting semiconductor elements. Because of the structural differences between APAF and Takahama, one of ordinary skill in the art would not look to Takahama to modify APAF. The proposed combination of APAF in view of Takahama does not teach or suggest the Applicant's invention as recited in claim 6.

Regarding the rejection of claim 8, the combination of APAF in view of Takahama does not teach or suggest the Applicant's claimed invention, for at least the reasons discussed above. As noted in the Amendment filed on February 23, 2004, Abrams requires dielectrics 27 or 29 to be interposed between a crossover conductor 26 or resistor 28 and underlying conductors. Therefore, Abrams does not teach or suggest an unfilled gap formed between the bonding wire and the interposing electrically-conductive trace, as recited in claim 6.

Regarding the rejection of claims 11 and 13, for at least the reasons discussed above, the combination of APAF in view of Takahama does not reasonably teach or suggest the electrically-conductive bridge recited in claim 11.

It is believed the application is in condition for immediate allowance, which action is earnestly solicited.

Respectfully submitted,



Peter F. Corless (Reg. No. 33,860)  
Steven M. Jensen (Reg. No. 42,693)  
EDWARDS & ANGELL, LLP  
P.O. Box 55874  
Boston, MA 02205

Date: July 23, 2004

Phone: (617) 439-4444

Customer No. 21874